Tectonics 2016 vol.35 N9, pages 2158-2170

Biotic paleothermometry constrains on Arctic plates reconstructions: Carboniferous and Permian (Zhokhov Island, De-Longa Group Islands, New Siberian Archipelago)

Davydov V.

Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

©2016. American Geophysical Union. All Rights Reserved.A warm-water fauna and flora from a Carboniferous limestone xenolith that was captured during penetration of deep intraplate Cenozoic basalts through a Paleozoic carbonate platform have been found on Zhokhov Island, New Siberian Archipelago (NSA). This limestone xenolith contains a very high taxonomic diversity of Moscovian (Middle Pennsylvanian) tropical foraminifera and calcareous algae. As this warm-water biota never occurs north of the forbiddance line, i.e., 30–35°N/S, this fauna and algal flora constrain the paleogeography and interpretation of the paleotectonics in the region. Thus, the location of the most of the New Siberian Archipelago islands at that time must have been within tropics or subtropics. Analyses of the existing data on fusulinid distribution within the Arctic region indicate that Zhokhov and Wrangel Islands were still a part of Alaska-Chukotka composite terrane as late as in the Artinskian. Both fusulinid and detrital zircon provenance data suggest that the Chukotka microplate, NSA, and Wrangel Island probably were close to Arctic Alaska until Triassic time. The fusulinids from the Mankomen Formation and other formations in Wrangelia show a strong affinity with the Uralo-Franklinian province regions including the Sverdrup Basin, Spitsbergen, Barents Sea, and Timan-Pechora and the northern-central Urals rather than with northern Panthalassa.

http://dx.doi.org/10.1002/2016TC004249

Keywords

Chukotka and Wrangelia terranes, Late Paleozoic biota, New Siberian Archipelago, paleogeography, paleothermometry constrains